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ABSTRACT

This report describes a project conducted for the following purposes: (1) research the new technologies that will be part of the upcoming information boom, popularly referred to as the "information superhighway"; (2) interview technical professionals in the scientific field to find out their feelings and predictions on the technology; (3) produce an easy-to-read training manual in the information superhighway including teaching suggestions for adult basic education instructors; and (4) disseminate the training manual throughout Pennsylvania. The project included a literature review, interviews with technical professionals, online research of the Internet, and interviews with educators. A basic staff development training manual was developed, consisting of 10 units. Topics covered in the manual are as follows: what is the information superhighway?; connecting to the information superhighway; network addresses; electronic mail; network newsgroups; Internet resources; commercial online service providers; starting up; and resources for adult education classes. A glossary, 24 references, and a planning form for Internet connection are provided. (KC)

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ED 395 111

# Final Report

# "Licensed to Drive on the Information Superhighway"

Federal Adult Education Act

Section 353

Priority C.1

Contract #99-5017

Funding: $6667

1994-95

Prepared by

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Abstract

**Title:** *Licensed to Drive: Staff Development Training on the Information Super Highway*

**Director:** Carol Molek
**Address:** Adult Education Job Training Center
1 Belle Ave #58 MCIDC **Phone Number** 717-248-4942
Lewistown, PA 17044 **Funding:** $6,667

Purpose:

This project proposed to:

-actively research the new technologies that will be part of the upcoming information boom, popularly referred to as the "Information Superhighway."

- to interview technical professionals in the scientific field to find out their feelings and predictions on the technology

- to produce an easy to read, useful training manual on the Information Superhighway including teaching suggestions for ABE instructors.

- disseminate the training manual state-wide.

Procedures:

The project included research of available literature, interviews with technical professionals, online research of the internet system, and interviews with educators. A basic staff development training manual was developed and included: technologies, hardware, commercial service provider comparison, in-depth descriptions of terminology, internet computer connection information and instructor teaching suggestions.

Summary of Findings:

The manual "Licensed to Drive on the Information Superhighway" is a comprehensive document that covers the basics of how to select equipment, descriptions of the major software and online service providers. It describes and explains technical details and defines basic vocabulary which assists the beginning "net surfer." It is intended as a basic beginning overview of the internet. Technical evaluation of the materials was conducted by technical advisors for accuracy during development.

Comments

The internet is a vast resource of educational information. The ease by which worldwide exchange of knowledge is possible is exciting. However, the rapid change of the Information Superhighway is frustrating. Technology and the materials contained on the network are in a constant flow from computer to computer. Careful consideration needs to be given in cost of time and equipment to extract information. Student access to network contents must be carefully considered when planning lessons. Educators must constantly update internet skills through planned usage.

Product:

Staff development training manual: "Licensed to Drive on the Information Superhighway." This is a 10 unit, 63 page, educator's introduction to the technology, skills and vocabulary of the internet.

## Introduction

This project addressed priority C.1 -staff development project. The project proposed to develop a staff training manual explaining the technical aspects and educational value of the "Information Super-Highway" or internet system. This manual is intended to assist the adult educator and administrator who wish to understand and connect a computer online to the rapidly expanding information superhighway. The audience for this manual is the adult instructors, program directors, and administrators across the Commonwealth. This staff training manual outlines the computer technologies involved in the information boom and presents strategies to educators that allows them to expose students to these computer technologies. The manual contains the basic information describing the Information Superhighway, how to get connected, and how to navigate the internet computer system. It is the intent of this manual to assist the educator who wants to understand and use this technology in the classroom.

The time frame for this project was July 1, 1994 to June 30, 1995, during which time information was gathered from technical experts, books, current magazines, television programs, and personal experience on the internet system. The internet system is a large interconnected network of computers located world wide and is considered the information superhighway.

*"Licensed to Drive on the Information Superhighway"* was administered by the Tuscarora Intermediate Unit 11. The Tuscarora Intermediate Unit is a local education agency which provides educational and management services to 9 school districts and 3 area vocational-technical schools in Fulton, Huntingdon, Juniata and Mifflin counties.

The Intermediate Unit sponsors all T.I.U Adult Education and Job Training Center programs. The Center programs include: 322 Adult Basic Education and General Educational Development programs; Act 143 Pennsylvania Adult Literacy; Job Training Partnership Act Adult Basic Education, employment and job training programs; single parent/displaced homemaker services. In addition, the I.U. has sponsored fifty 353 special projects.

Project Director was Carol Molek. Ms. Molek has 11 years experience directing adult programs for the I.U. and developing and implementing special projects. The project facilitator was Dr. Barbara Woodruff, Computer Specialist at the Adult Education Job Training Center, who has had over 16 years experience in adult education and curriculum development and computer technology.

This report is intended for instructors and administrators in adult education programs who are seeking a training manual on the Internet to assist in connecting and understanding the Information Superhighway.

Permanent copies of this report can be obtained from:

Bureau of Adult Basic and Literacy Education Programs
Pennsylvania Department of Education
333 Market Street
Harrisburg, PA 17126-0333

and

AdvancE
Pennsylvania Department of Education
333 Market Street
Harrisburg PA 17126-0333

and

Western Pennsylvania Adult Literacy Resource Center
5347 William Flynn Highway
Route 8
Gibsonia PA 15044

## Statement of Problem:

The computer technology has been expanding at a rapid rate over the last several years. It is now possible for citizens in some areas of the country to shop for their food, exchange information with people around the globe, check the stock market or sports scores, search for a job, read a magazine or book, do routine banking tasks, learn the latest information on a breaking news story and many other "routine" daily activities - all from a personal computer! The last ten years have shown tremendous growth in technology that most Americans now enjoy. These innovations include VCR's, high definition televisions, arcade-quality video

games, fax machines, ATM cash machines, MRI machines, cellular phones and countless other devices that have made lives more convenient. The innovation in hyper-fast computer chips and fiber-optic cables promises to change even more rapidly the way in which Americans live their lives. New jobs are being created in emerging computer technology fields and adult educators and students must become aware of these opportunities. Adult educators need to be equipped with the tools they will need to help their students succeed in and out of the classroom. To do less is severely short-changing students who are trying to cope with the educational and technological requirements of everyday life. Educators have expressed interest in using computer technology, such as the Internet and e-mail in the classroom but have lacked the knowledge for effective use. While many books and magazines exist about the Internet, it is very time consuming for the adult educator to collect and read all of the material available and then begin to use the information in class. This manual provides a readily accessible source for questions and descriptions about the Information Superhighway or internet network, as well as suggestions for class use. Some educators may wish to use the internet system on a personal computer at home prior to incorporating information in class and this project also explored personal use of the internet.

## Goals and Objectives:

The goal for this project was to develop a staff development training manual on the rapidly changing information and educational computer network systems. The manual is intended to provide information about the internet system to assist the educator who wishes to connect to the information superhighway and introduce the students to the world beyond the classroom door.

Objectives were:

- to actively research the new technologies that are a part of the information network or information superhighway.

- to interview technical professionals in the scientific field and education field on the use of the new technology.

- to produce an easy to read, useful training manual in the information Superhighway which will include teaching recommendations for ABE instructors.

## Procedures:

### (1) General Design:

There were five stages in the development of this project:

Phase 1: July, August, September 1994

Research of materials related to information superhighway was conducted. Included were: newspaper articles, magazine articles, and technical journal articles, video tapes of television programs devoted wholly to the Information Superhighway, interviews with technical professionals in both the scientific field and the education field, specialized books directly related to the information superhighway and last, hands on experience on the internet system. This phase was completed by the beginning of October. However, review of literature was continuous so new articles that were relevant were included in the research. Discussions were held with various education field staff to determine what information they would find useful in learning to use the internet system and in teaching the internet connection to their students.

Phase 2: October, November 1994

Interviews of technical professionals in the fields related to Information Superhighway were conducted: John Fleishman of OTAN in California who has 10 years experience developing and operating a network system for adult education; several network specialists from Drexel University, University of Pennsylvania,

and Penn State University were interviewed and their information assimilated into usable outlines.

Phase 3: December to February 1995

The writing of the manual was completed during this period. A general review for accuracy of the information was conducted by microcomputer network managers at Penn State University. Corrected draft copy was returned at mid-March instead of February. This was late for corrections which needed to be made and subsequently delayed the review process.

Phase 4: March - May 1995

The manual was distributed to attendees at the Workforce Literacy Conference held at the Penn State Scanticon, several computer network coordinators at Digital Corporation, State College and to selected regional coordinators. In addition, every opportunity was taken to hold discussions with educators about their interest in connecting onto the internet. Impromptu discussions were held at the February, 1995, PAACE conference, and the Workforce Literacy Conference sessions held in March and April.

Phase 5: June 1995

Corrections of the manual and writing of the final report is the final phase of the project. Because of the delay in the review portion of the project, evaluation methods were slightly changed. Part of the technical review has already been conducted during the draft stage of the manual. Instructor evaluation of the manual is planned using the inclusion of the evaluation page contained in

the manual. When the manual is distributed, the user is requested to return the evaluation page to the Adult Education Job Training Center. A more formal instructor evaluation was not possible during the development of the manual mainly because of the delay in review returns during the draft writing stages. A staff development training program had been planned; however, because of the delay in gaining internet access at the Adult Education Job Training Center, online demonstrations were not possible during the development stage of this manual.

## Conclusions:

There were positive outcomes of the project. The objectives of researching and developing a staff development training manual on the Information Superhighway were met. The excitement of being able to contact people and obtain information world-wide was outstanding. Interest on the part of technical professionals was infectious. One could not help but become interested in new opportunities and new horizons to explore. Contacting people in various parts of the world, paging through articles in the newsgroups, reading opinions of people on various subjects, and obtaining information on many subjects almost instantly from the vast knowledge of experts is an unparalleled experience. It is in the spirit of sharing this experience that this manual was developed.

One of the early plans was to develop a list of information available on the internet. However, keeping an accurate list of

available information and the site location was very difficult to maintain because of the constant changes. The practice of keeping a list was abandoned when it became clear that a comprehensive list is not possible. Popular sites are very busy and may not be readily accessible. Some sites are not very user friendly currently, and may present some difficulties for new users. Traveling through the network is not always straight forward which can become confusing. Many detours to different access points were necessary to obtain the required information when sites were busy. In retrospect, it was a good learning experience.

There were some drawbacks, however. In meeting the objective of actively researching the new technologies, a huge amount of reading and online computer time was required. This was an intensive project. Some of the computer time required late (past midnight until 4:00 a.m.) night hours "traveling" the internet system. Usually this was because parts of the network were less busy during these times or because of the time difference in the international time zones combined with the desire to "chat" with people world-wide. Much of this late night net traveling was done on weekends.

The project information was rapidly changing throughout the length of the project and it was difficult to keep up to date. When the project began, there was a beginning trickle of information about the internet. Suddenly midway through the project, interest in the Information Superhighway exploded. Every computer

magazine and many educational magazines contained lengthy articles. Magazine and newspaper articles and television programs introduced concepts and contradicted the concepts almost as soon as they were published. Digging through this information took weeks. Checking the accuracy of the articles with technology professionals took more time. In addition, Dr. Woodruff conducted online research in excess of 50 hours and even this amount of time was not sufficient to search more than a few selected sites, check into a few newsgroups and locate some international keypals for basic correspondence and exchange of information.

As the internet system develops, network navigation is becoming easier through the use of new software. Some of this software is free or inexpensive, and some of the software is very expensive. However, a lot of the more comprehensive software packages require computer systems that are increasingly more powerful and this was a limitation in the project. The Adult Education Job Training Center did not have total internet access and because of the method of access, contact was limited to educational sites However, Dr. Woodruff did have separate, wider personal access to the internet at another site throughout the project which was useful for late night access.

Technical professionals were usually very helpful in the early stages of the project and were eager to share information. Later on, their increasing work loads made contacts difficult. Draft copies of the manual were delayed in the reading and review

stage because reviewers could not spare the time to read and comment on the materials. One reviewer did not return any comments. New information was continuously added to the existing manual and after several complete revisions, it was necessary to stop adding to the manual or it would never be completed. In addition, the manual was intended as a beginning manual, and much of the information located later in the project was extremely technical and not relevant.

Several computer network coordinators recommended that specific instructions for use of various internet sites not be incorporated into the manual since the network is changing rapidly and newly developed network software may not have the same step-by-step command structure. The Penn State microcomputer network managers confirmed this recommendation and demonstrated this point using some changes that had occurred in sites.

Finding the money for internet connections was also found to be a problem for agencies according to some educators. It can be expensive to connect to the internet for several reasons. First, selection of a computer with sufficient memory and hard disk drive space is necessary. Some agencies have suitable computers available and some must acquire them to use the project. Second, the computer must include a high speed modem capable of downloading network information. Last, a dedicated (computer use only) telephone line is needed. Often, the education agency may not have an available telephone line for student computer

access. In addition, telephone time for long distance calls can be expensive. In rural areas, local call access numbers for commercial service providers are not available. Through the assistance of technical professionals, Dr. Woodruff was able to minimize the long distance charges that normally would have occurred during the course of this project.

There were some other negative outcomes of the project. Some educators were contacted regarding their potential use of the manual in the "Licensed to Drive on the Information Superhighway" project. However, many of these people did not have ready access to a computer, much less access to a modem and the internet. These people felt that we needed to try to find funding for them to obtain basic computers first, rather than try to tie onto the internet. It was difficult to convince them to think about connecting to the internet and then planning how to include the internet information into their classes.

Some educators felt that we were opening an area to our students that might be a problem. Connections could be expensive because of equipment requirements, telephone access charges and commercial service provider fees. Budgeting for these amounts can be problematic. Access to the total internet system was also seen as a problem. Students would have access to all types of materials, some of which might not be considered suitable. While there are methods of controlling access, this does continue to pose an ethical concern. Do we restrict access to certain areas by our

students? Or, do we teach them why some areas are not acceptable and hope they make good choices when accessing information. Discussions held with educators revealed they are about evenly divided as to how to deal with this concern.

**Recommendations:**

The manual, "Licensed to Drive on the Information Superhighway," is a comprehensive document that covers the basics of how to select equipment, descriptions of the major software and online service providers. It describes and explains technical details and defines basic vocabulary which assists the beginning "net surfer." It is intended as a basic beginning overview of the internet.

The internet network is a vast wealth of information and resources that changes minute by minute. Companies are going online to add information in vast numbers of megabytes every day. Reading about the internet and then practicing on the internet was very important in the preparation of this project. Since the technology is changing very rapidly, the information in this manual may need to be updated frequently in order to keep pace with the developing internet network system. Policy decisions regarding the student access of certain "adult sites" on the internet system need to be made in advance to prevent problems.

In implementing this manual in the adult education classes, detailed planning is recommended. First, obtain an estimate of the cost of computer equipment and telephone access line. Next, budget an amount of time and money to be used by the educator in learning about the internet. This learning is best achieved through practice on the internet system prior to incorporating the information into classes. A planned student budget of time and money for each student to use on the internet should also be completed.

Students need to be computer knowledgeable about commands before attempting to logon to the internet system. A buddy system combining an experienced computer internet student with a training student is recommended. The experienced student can assist with confusing command structures and site locations which can make the learning of the network more enjoyable for the trainee student.

It can not be stressed too often that educators need to be aware of how their students are accessing the internet system and to never give out personal addresses or telephone numbers online to strangers. Careful control of online time is critical since time moves quickly when attempting to locate and log into sites. If the commercial service provider has a limit of storage space and time online, students must know what are the limits or risk higher fees.

A final important recommendation is the continuous updating of knowledge by educators using the internet system. Sites and access commands change. New sites appear and some sites become popular nearly overnight which can prevent easy access. Educators planning to use the Information Superhighway information in classes must stay current in the technology and update lesson plans very frequently.

This was an exciting and interesting project. However, it was extremely time consuming in the amount of research work and online time. It was frustrating to see the information changing so rapidly that just keeping up with developments was a full time job. E-mail and direct contact with world wide interests is facinating. However, reality checks in the usefulness of the information obtained and costs of online time need to be made. It is very easy to get carried away with the vast amount of accessible information and spend hours jumping from site to site accomplishing only the expenditure of time and money and having little to nothing to show. While some exploration is necessary, excessive amounts can be dangerous to the agency budgets. This manual serves as a beacon to what could be. The educator and student together will add the remaining what is.

**Planning for Information Superhighway Connection and Use**

| **Equipment** | **Price** |
|---|---|
| Monitor - Color/Black & White | |
| CPU at least 4 MB RAM | |
| Hard Disk Drive - size in megabytes | |
| Keyboard | |
| Modem 14,000 baud or up | |
| **Total Computer Equipment Charges** | |
| Telephone Connection Line Installation | |
| Commercial Network Provider Charges | |
| Extra Charges for special services by Service Provider | |
| Services: | |
| _____ | |
| _____ | |
| _____ | |
| _____ | |

Amount of time allocated for instructor use _____
cost per hour _____ _____

Amount of time allocated for student use _____
cost per hour _____

**Total Estimated Budget for Information Superhighway Access** _____

Evaluation Form:

Return to:
Dr. Barbara Woodruff
Adult Education Job Training Center
1 Belle Ave. Lewistown PA 17044

Please assist us in adapting this manual to your needs. Fill out this form and return to the above address after you have connected to the internet and used various sites for several weeks. Please remember this is a beginning manual and because of the changing nature of the internet, some internet material may not have been available to be included.

How useful was the layout of the manual?

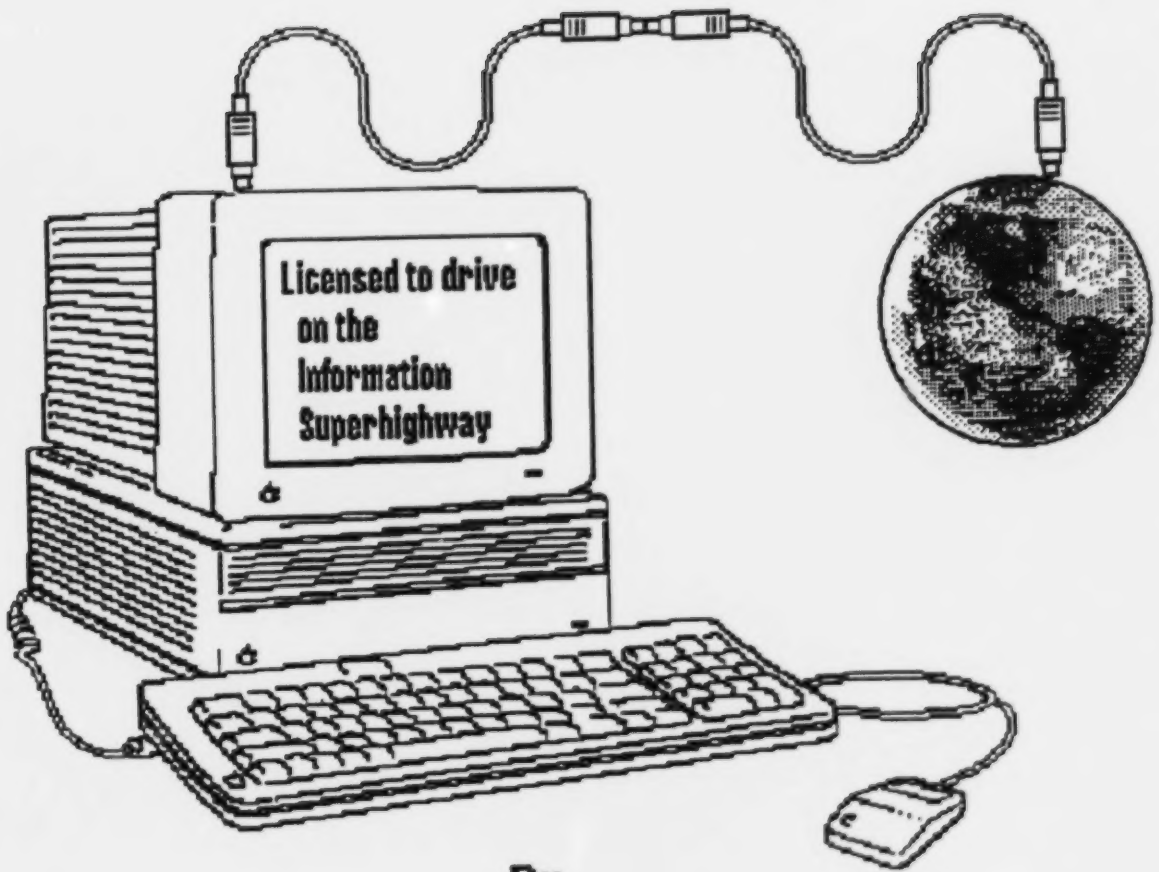
Extra white space was provided on manual pages, how did this help in the reading?

How understandable were the technical descriptions?

What was the first site you used on the internet and why?

What could be changed to improve the usefulness of the manual.

What special sites would you recommend to other adult educators? Please give as complete an internet address as possible.

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# Are you licensed to drive on the Information Superhighway?

**By Barbara A. Woodruff Ph.D. Computer Specialist**
**Adult Education Job Training Center, Lewistown**

## Introduction:

If your answer is "what is the information superhighway?" Or even if it is "how do I get a license to drive on the information superhighway?" Help is in your hand. By way of simple explanation, the information superhighway is a place to find nearly all the information you ever dreamed of wanting and never knew where to look. Merely by turning on your computer, accessing your modem, and linking onto a service provider you will have the world literally at your fingertips.

What type of information is available? There are stock quotes, software to download, information on nearly any subject, and an unlimited opportunity to send messages to other people with similar interests. There are online discussion groups on nearly any kind of topic. People can check in online, read messages sent to them and then answer or add a new message, look at images of fine art from the Louvre or read passages from a 218 volume set of Medieval Latin literature or read information on how to start a small business and have an online discussion with various business leaders. There are electronic pen pals from all over the world, even chances to exchange recipes. Sounds interesting? Then, this manual is for you.

The purpose of this manual is to explain the information superhighway and how it is accessed, what equipment is needed and some of the information available. Along the way, new terminology is explained in simple detail and an explanation of the computer hardware required is also included. This manual is intended to be a non-technical explanation of a complex subject, namely the Internet. If additional information is needed, please check the annotated bibliography located in the Appendix. This manual will include both MS DOS and Macintosh environments. Format of the manual is done in a question and answer format which is one of the easiest methods of presenting complex information. The question and answer format permits the reader to skip directly to the information needed.

## Unit One

### What is the Information Superhighway?

The Information Superhighway consists of an interconnecting series of computer networks. At the basic level is the Internet which is a network of networks. A network is a linking of various computers to each other and sharing information contained on each. The Internet is a collection of over 40,000 networks both small and large, all connected together to share resources and exchange electronic mail [e-mail]. Started by the U.S. Department of Defense to facilitate scientific research, the Internet was originally known as the Advanced Research Projects Agency Net [ARPAnet] for use by government employees. The communications protocols required for connection was an invention developed on the ARPAnet. These communications protocols or the language are needed to communicate between computers. This language is known as IP or Internet protocol.

Desiring people attending a four-year college to have access to a network, The National Science Foundation in the late 1980's created 5 regional supercomputer centers located around the United States. These were very fast computers and were intended for academic research. Almost instantly it became apparent that the academic researchers needed to connect the computer centers together in order to facilitate the ongoing research. A linking of the 5 supercomputer centers over specially constructed telephone lines seemed the ideal solution. Other people doing research also wanted to link up with the supercomputer centers. However, the special telephone lines were very expensive and regional networks were created by

permitting nearby networks to link in daisy chain fashion to their nearest supercomputer center. Thus the National Science Foundation Net [NSFNET] was started. The NSFNET network used the protocols invented by the Advanced Research Projects Agency Net [ARPAnet]. By 1987 the NSFNET had grown so large that the National Science Foundation could not manage it any more. The Merit Network received a contract in 1987 to manage and upgrade the network. Merit, combined with IBM and MCI, ran the Michigan educational network. The upgrading of the NSF network consisted of replacement of slower telephone lines and installation of faster computers. When the upgrade was completed, the network was opened to most academic and governmental researchers, and access was extended to international research organizations in foreign counties known to be allies with the United States.

Finally, in the early 1990's, the network was opened up to commercial sites and corporate entities. These companies began hooking up other educational institutions, companies, and individuals. Some of the commercial names are familiar: America OnLine, Prodigy, and Compu-Serve, among others. These companies provided access to various networks via this Internet network. Today, the Internet is a collection of high-speed networks with the National Science Foundation Net as the original backbone and more than 5,000 attached regional, state, federal, university and corporate nets. Linking networks are also available in Europe, Japan, Australia, Central and South America, and Canada. As more and more people and companies began to connect their networks together, the tangled web of connections we call the Internet was formed.

It is estimated that the Internet is growing at the rate of approximately 10 percent per month as more businesses and universities come online. Large multi-national corporations have begun to consolidate their separate, smaller networks into a single larger network. The telephone companies see the connection to the Internet as an additional service such as call-waiting. Using the Internet connection, people are able to send e-mail messages, order and pay for merchandise and services.

Education in the future could change also, with students going online with other students and teachers in various forums. Bussing students to a central location to interact with other students may change. Turning on a computer, especially when video becomes commonplace, may be the first thing a student would do each morning. Lessons in foreign languages could come directly from contacts in the foreign country. English, Math, and Science could be studied by downloading information or lessons from a centralized school district where students would be registered. Lessons could be uploaded each day or each week as the student completed them. Help sessions would be available online instantly. Updating of programs could be achieved more quickly and cheaply by a teacher online than by selecting and purchasing new expensive textbooks that can become obsolete even before they arrive at the school.

The world of work is already changing. People can now live where they choose to live and connect to their office via computer modem. Downloading and uploading documents, spreadsheets, databases, and various project information permits the person to work at home and visit the office only occasionally rather than commute daily. Small notebook type computers are becoming less expensive. Recently, a newly

married couple carried a small notebook computer with them on their honeymoon so that they could check their e-mail while away from the office and handle any emergencies. Small laptop computers using word processing software only are available for less than $300 and can be carried to meetings instead of pencils and paper. Later, meeting notes can be uploaded into a larger computer and the information converted into a printed document. Online conferences connect businesses located in many foreign countries easily and more cheaply than sending a person to that country for a meeting.

## Unit Two:
## Connecting to the Information Superhighway

**How do you connect to the Internet?**

Connecting to the Internet and traveling along is done by connecting your computer via a commercial Internet provider or university connection and then passing through dozens of computers on your way to your destination (that is if you know where you are going). Many people do not know where to find various parts of the network. Imagine the Internet to be a very large old maple tree. Each leaf on the tree is a separate network. Then, try to imagine what directions you would have to give the computer to be able to locate just that one specific leaf you are seeking. This will give you some idea of the complexity of the system. The "IP address" is the key used by the network routers to locate the path to your computer from the various connectors on the Internet. This is the way information can be routed to you from many sites. To find specific information, an "IP address" which gives the pathway to this information location is necessary. Large amounts of related information can be retrieved from many locations. There are software programs called Gophers that gather together bits of the information located on many networks and organize it into a menu system which improves access to various systems. This does help navigate on the superhighway. It is important to realize that you will not be able to master all the commands or to locate everything instantly. The network is so huge that it may take months or even longer to find things. There are many resource books available and many more will be produced as people begin to navigate through the system. Since the system changes continuously as more information is

added, keeping up-to-date can be a continuing process. Getting connected to the network can be achieved using several different types of connections.

## Dedicated Connection

An MS-DOS or Macintosh computer with a minimum of 4 megabytes of ram can be directly connected to the Internet using this type of connection. The dedicated Internet connection is a direct telephone connection to the network and is usually available in universities, government agencies, and large corporations. Your computer is connected via a dedicated (restricted use) telephone line using a router at your site. This is a faster operating connection since it is not necessary to wait for the modem to connect. However, this is a very expensive connection. Cost estimates from 1993 are between $15,000 to $20,000 for the first year and $5,000 to $10,000 per year after that.

## Connection using a MODEM.

A modem connection is a relatively cheaper method of connecting to the Internet. Choose either an MS-DOS or Macintosh computer with a minimum of 4 megabytes of ram. Computers having less than this amount of ram may have problems downloading information from the network or connecting a higher speed modem. It is recommended that the computer have a hard disk drive, especially if information is to be downloaded. MS DOS and Macintosh computers are easily connected to the Internet using a modem. The modem is an interface between the computer and the telephone line connection. The typical modem transmits 2400-baud which is

240 characters per second. There are slower modems: 1200-baud and the very slow 300-baud. These slower modems will be difficult to connect to the Internet which requires at least 2400-baud or higher. There are also faster modems: 9600-baud and 14,400-baud, for example. If you are considering the purchase of a new modem, try to get at least a 9600 baud modem. While the 2400 baud modem will work on the networks, the transmission is slow. Baud rate can sometimes be given as bits per second or bps.

Set up the computer next to a telephone line so that the connection wire from the modem is not longer than 10 feet. Longer lines can cause connection problems. Be sure to disconnect any call-waiting services before connecting the modem to the telephone line. Call-waiting will also cause connection problems. Check with your telephone service to see how to disable call waiting temporarily. The modem can be external (in a box next to the computer) or internal (installed inside the computer case). Load the communications software that came with the modem. A modem can be IBM/MS-DOS compatible or Macintosh/Apple. A modem is only a connection from the telephone line to the computer. The software is the connection that operates the modem. This means that you can use <u>any</u> modem that will connect to your computer if you have a communication software package to operate it. For example: you could use an external Packard Bell IBM-MS-DOS modem on a Macintosh and use the communications package in Claris Works to operate the modem. It is the <u>software</u> that connects the computer and telephone together. The modem is only a conduit.

If the computer is not Macintosh, MS-DOS or IBM compatible, check with the potential service provider (Prodigy, CompuServe, America-On-Line or similar companies) before buying a modem to see if the computer can be accepted on-line. Some computers are no longer being manufactured and software is difficult to obtain. These computers may not be able to use the networks because the software does not connect to the network. An example is the Commodore computer. The Commodore computer has been able operate on some networks; however, since this computer is no longer being manufactured, some of these Commodore accessible networks are ending. If planning to use a computer more than 8 years old on the Information Superhighway, check with a computer specialist to see if this is possible. This specialist could be a local high school computer instructor, some one at an adult education facility or local computer sales store. Software and equipment changes rapidly. The 300 baud modem that may be a part of this older computer will not operate on many of the networks.

**Can an older computer be used with a new modem?**

Check with the vendor when buying the modem. Make sure the software will run on the older machine. For example, you are buying a modem for an MS-DOS computer that does not run the software program Windows. Do not buy a communications package that requires Windows because the software will not run. Check to see what disk operating system is required to run the software. Macintosh now has System 7. Some communications software will run on System 6.8 but some software requires System 7. MS-DOS system computers have the same problem. MS-DOS is now available in DOS 6. Some software will work on System 3.2 or under. Usually the

software package will state the minimum computer system required. If in doubt, ask the vendor before purchasing the modem and software since some vendors will not accept returned software when the plastic wrap has been opened.

## What are SLIP and PPP Connections?

SLIP (serial line internet protocol) is used to run Internet protocol over telephone lines or RS-232C cables that connect the two systems. SLIP is now being replaced by PPP (point to point protocol) which provides network router-to-network router and host-to-network connections. A router is a system responsible for making decisions about which path to use for the connection. As of summer of 1993, an individual commercial user charges for SLIP or PPP connection was approximately $150 and monthly charges of $65 for 80 hours of service. The SLIP and PPP connections allow your computer to access the network. These connections require a high speed modem (over 9600 baud) and are active only while the modem is connected.

## What is TCP/IP?

Transmission Control Protocol/Internet Protocol (TCP/IP) provides a common set of rules to enable computer-to-computer communication. This is a widely used protocol (set of rules) used between different computers. TCP separates information into smaller pieces that are more easily managed. It is basically a language of commands recognized by various routers and computer systems. This is a very simple explanation for a complex layering system. If additional

technical information is required, please consult *The TCP/IP Companion: A Guide for the Common User* [1] by Martin R. Arick. This book contains a complete explanation of the TCP/IP and how these protocols fits into the model of networking and the application of these protocols into applications.

## What if I don't have a network system available at work?

You can use a time-shared system that does have an Internet connection. There are national providers such as Sprintnet, Tymnet, or CompuServe which will let you sign up on-line. These providers are usually listed in various Internet information books available at your local library or bookstore. Sign-up involves providing name, address, telephone number and a credit card number for payment of services. There are on-screen prompts for you to follow to get connected. When choosing this type of an Internet provider, consider also the cost of the phone call. The best option is a local call for the dial-in access number. Some providers have 800 numbers but also have high hourly rates to cover the cost of the 800 number.

If there is no provider available with a local phone call, one other option is Speedway, an Internet service in Oregon that charges only for the phone call. You must call via AT&T via modem: 10288-1-503-520-2222 or via E-mail: info@speedway.net.

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[1] Arick, Martin R. Ph.D. The TCP/IP Companion: A guide for the Common User. 1993. QED Publishing Group.

Sprintnet PC Pursuit service lets you dial in locally and connect to another modem located in one of 12 cities. Contact Sprint at 800-736-1130 for more information and charges.

*Internet for Dummies* by John R. Levine & Carol Baroudi[2] lists twelve pages of national providers categorized by geographic location. Since the list is quite extensive, check in a bookstore for this book for more information. Occasionally, there are articles in the computer magazines about connecting to the Internet. These articles sometimes give names and contact information for the providers. Check the newstands or computer stores for these magazines. New magazines are appearing nearly weekly, so check frequently.

## Internet Access -- DOS

Setting up the DOS computer to the Internet requires a certain type of software. Check to see if the DOS computer has a native connection to the Internet or whether it uses some type of network. A native connection runs the network software that handles the TCP/IP network language that the Internet uses. The computer may be running some other kind of network software (often Novell's Netware) and is attached to a gateway system that has Netware and TCP/IP. If your computer is attached to a network system, ask the network manager for assistance in setting up your Internet access.

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[2]Levine, John R. and Carol Baroudi. "Internet For Dummies" Boston: IDG Books World Wide Inc. 1993.

If your computer is not connected to a network system, you must obtain a modem and have access to a telephone line. When purchasing a modem, it is important to use a modem having a speed of at least 9600 to 14,400 baud. Speeds less than this will have problems dialing into an online system.

Next, obtain TCP/IP software for DOS computers. Since this can be difficult to configure, seek the assistance of a friend or colleague who has computer experience and can help in the configuration process. You will need:

- The service provider's modem telephone connection number.

- Your unique Internet identifier (an IP address) and an e-mail address. The service provider will normally tell you what these are. You will also need to know whether your address is a permanent one, or whether it is assigned by the host computer each time you log onto the service.

- The name and IP address of your Domain Name Server (depending upon how your computer is reached, there might be more than one.)

- You may also need the gateway address for the server you will dial into.

The DOS/IP applications use a line-at-a-time interface like the DOS command language.

Windows applications permit multitasking which is running several programs at once. When using FTP which is the file transfer protocol, most Windows versions permit you to select the files to copy by clicking on the filenames contained in a list. DOS versions demand that the filenames must be typed in.

There are many versions of TCP/IP available in commercial packages. Choose the software that is easiest for you. Often, it is best to select the software that a knowledgeable computer friend uses since you will have a person who can assist in the setup or with problems.

### Internet Access---Macintosh

The Macintosh needs certain software in order to connect online. First, Apple's MacTCP software which is available on system 7.5 or is available on several Internet software packages. TCP is a control panel interface that permits the Macintosh to communicate with an Internet host computer in Internet Protocol (IP). Unless you have some experience with Macintosh computers and modems, it may be wise to have a Macintosh knowledgeable person or the service provider set up the TCP software commands. In order to set up the TCP you will need:

- the service provider's modem telephone connection number

- Your unique Internet identifier (an IP address) and an e-mail address. The service provider will normally tell you what these are. You will also need to know whether your address is a permanent one, or whether it is assigned by the host computer each time you log onto the service.

- The name and IP address of your Domain Name Server (depending upon how your computer is reached, there might be more than one.)

- You may also need the gateway address for the server you will dial into.

Second, a SLIP (Serial Line Internet Protocol) or a PPP (Point to Point Protocol) account will enable your Macintosh to be a part of the Internet. SLIP and PPP accounts are usually more expensive and may be billed on an hourly basis and you may pay a higher monthly fee. Not every Internet site supports SLIP and PPP, so check with the service provider before obtaining this software.

If your company provides a direct access to the Internet network, check with the computer specialists for assistance in setting up your computer.

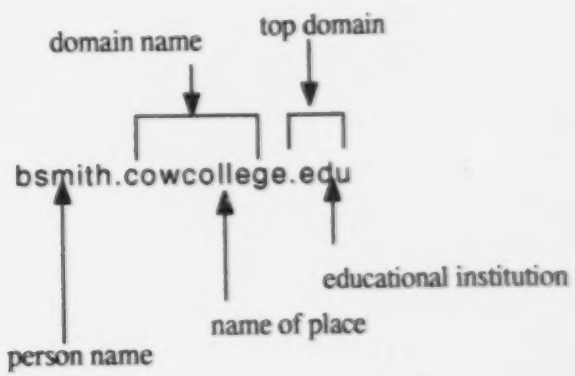
## Unit 3

## Network Addresses

**What do all those numbers, dots and squiggles mean?**

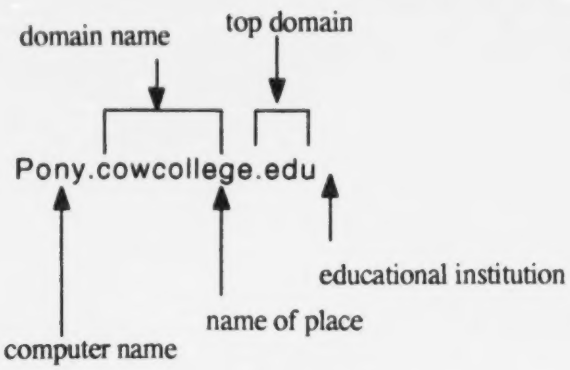
Internet mail addresses have two parts. The @ sign separates the two parts. The part in front of the @ is the **mailbox** which can be your name. The second part after the @ is the domain, which is the name of the computer. If the computer is a part of a larger network, for example LgDog.edu. the individual computer may be named: Fido. The name would be Fido@LgDog.edu. Each part of an electronic address has a separate meaning. When typed all together it can sometimes look confusing. However, it can be easy to translate.

**Example:** bsmith.cowcollege.edu.



Each person on the Internet has his or her own unique address. This consists of Username@domain.Top domain. Domain is the location or zone and top domain is the type of location.

The machine may also have a name: in this example, the computer name is Pony.




An Internet name is translated from right to left. On the right part of the name is the zone or domain.

| Zone | Means |
|---|---|
| .com | businesses and commercial organizations |
| .edu | educational institutions |
| .gov | government institutions |
| .mil | military organizations |
| .net | network resources |
| .org | other non profit organizations |

The category of Internet connection you have determines how you will use the Internet. If the category is education, research or noncommercial, then the Internet activities must be restricted to purposes of research, education, charitable activities, government affairs, public service or individual professional development. Research and educational use is routed over connections subsidized by taxpayers. A commercial Internet user has unrestricted activities since it is routed over a private connection. The service provider will route your Internet activities.

If your computer is accessed through a certain service provider, this information can be appended onto your address. An example is the connection for *Internet World*, a bi-monthly magazine for Internet users.

> The electronic mail (E-mail) address for *Internet World* is:
>
> meckler@jvnc.net or 70373.61@compuserve.com.

This is actually two addresses. The first, meckler@jvnc.net gives the name of the corporation (Meckler) and the address is JVNC.net. The symbol @ means <u>a t</u>. The second address is a part of the commercial service provider CompuServe that uses numbers as a part of the address.

## Unit 4
## Electronic Mail

Electronic mail is the most widely used Internet service. The exchange of documents and information between wide distances quickly is important. Mail will arrive at your computer and some type of alert will sound. This alert can vary depending upon what mail program you are using. There are many different mail programs available. Check with someone in your company to find out which mail program is being used. There are advantages and disadvantages for each mail program. Some are easier to use for beginners, some are more flexible for people who receive and send large amounts (over 100 messages per day). Use the same mail program as everyone else in your company or agency. If you have problems, there is usually someone around who will be able to help.

### How do I find out a person's E-mail address?

The easiest way is to call them on the telephone and ask them. This is quicker and you will be certain of getting the exact individual. If you are using an E-mail system in your company and wish to know the address of a co-worker, you can use the finger command to find the address. You type: finger jane and you will receive back information on all of the persons in your company who are named jane. This also works for other computer networks. If you know where a person works and

therefore receives E-mail, you can use the finger command to locate that person's E-mail address on that computer network.

To find the E-mail address of someone who works at XYZ corporation,

You might try typing: finger Jane @XYZ.com.

Many times it is a trial and error method of locating the address. Keep trying different names and different spellings using the finger program until you locate the person.

When sending messages, be aware of how you are using the e-mail system.
There are some uses that are specified as unacceptable by service providers:

- Distribution of unsolicited advertising.
- Transmission of anything that causes disruption of service to others.
- Transfer of computer viruses.
- Use of the network to gain unauthorized entry to resources.
- Violation of copyrights and licenses of programs.

Be careful using electronic mail. Remember that directing what you write to the correct person is important. Try reading it to yourself as you write it so you will know what it sounds like to the person receiving it. Many times it is impossible to understand humorous sarcasm in a message. People will resort to using code marks in order to show intended jokes. An example is: :-) Look at it sideways to see the smiley. Yes, you can show sorrow :-( .

You might also insert (grin) or (smile) in order to show humor. However, refrain from using e-mail just as a chance to share jokes.

## Who can read my messages?

This is not the post office. The mail is being sent over an electronic wire. Some mail addresses are redistribution centers that receive and redirect messages to other people. These messages may arrive together to one computer used in common by a few people. Therefore, a good rule is never send anything to someone that you would not want to see written next to your name in a classified ad in the local newspaper. There are some encrypting programs that encode messages so that only the recipient can decode it. However, both sender and receiver will have to run the same software for the encrypting programs to work.

**What are some of the major mail systems connected to the Internet?**

In order to use these systems, you will have to know whether the person you wish to reach is a subscriber to the system. It is easier to call the person on the telephone and have them send you a message with their mail system address. You do not have to subscribe to the system in order to send a message to someone on that system. Your service provider may give you access to send mail to other mail systems.

- America Online - To connect to a AOL user you will need to what name the person is using. AOL users can select names unrelated to their own name.
  Usual connection for a name is:
  georgewashington@aol.com

- AT& T Mail - To connect to a user:
  washington@attmail.com.

- Bitnet - This is usually a network of mostly IBM mainframes. Each system name contains the letters VM, (the operating system used at most Bitnet sites). The name is eight characters.
  Connection is:
  gwashington@mtvernonVM.bitnet.

- CompuServe - User names are pairs of eight numbers. To connect type the numbers of the users number:
  798765.4321@compuserve.com.

• MCI Mail - Each user has a seven-digit user umber and a user name. Send to the user using the number, username or person's actual name.
To connect:

gwashington@mcimail.com.

This list is by no means complete; there are other systems.

Tips and Advice for users:

• Always use your electronic mail address as your login password when accessing remote file transfer protocol (FTP) servers.

• Be careful not to offend foreign nationalities by inappropriate cultural references when accessing foreign counties. Remember this is an international network.

• Do not tie up popular sites during busy times. If you are accessing busy resources during business hours, be brief, consider the time zone differences, and try to find alternative routes to popular resources. Act as though every byte you send is being deducted from your paycheck. Storage space is expensive. Each message must be stored on the host computer until read. Send only what you need to send, and only to those persons who would find it useful.

• Try to find the closest source for the information you seek rather than connecting through many computers along the way. Connecting through many computers reduces the assess others may have while you are online.

• Log off properly when leaving the resource so that equipment and information is not left running. Some systems require that you log off when leaving. Shutting down without logging off leaves the equipment waiting for your computer to respond. This may cause delays for others to use the equipment. Some equipment will automatically log you off after a specified period of time. Other equipment requires a System Operator (Sysop) to log off your computer which causes delays.

## Unit 5
## Network Newsgroups

The network newsgroups are basically a worldwide collection of electronic bulletin boards. Here users post their messages. The network newsgroups are divided into many smaller newsgroups. Newsgroups consist of individuals interested in a single topic. They will begin a discussion about a topic and each person who desires to participate will post his/her comments about the topic. This discussion can be ongoing for days or weeks or it can be a permanent discussion group that people join and leave as they desire. Each message in the individual newsgroup is called a post or an article. Articles within the newsgroup are arranged in topics. Topics are usually related to the interest of the newsgroup. There are currently over 4,000 active newsgroups available on the Internet. Some newsgroups are specifically for the Macintosh computer and are usually about operating a Macintosh. Other newsgroups can be about nearly any subject. Articles usually build around a subject.

Using the subject Civil War, articles could be:

Battles-Gettysburg--Generals in Gettysburg--Union Generals in Gettysburg--Southern Generals in Gettysburg--Why the battle of Gettysburg--Information about Soldiers Fighting at Gettysburg--Types of horses used in the battle at Gettysburg--Little known interesting stories about the battle of Gettysburg.

It is considered inappropriate to discuss other subjects such as space exploration if the newsgroup is not centered around that topic. Some newsgroups will discuss various topics; however, please read what has been discussed before jumping online.

That subject may have been previously discussed and no one wants to waste time by repeating it. Remember, each minute online costs money.

There are some customs that have developed in the newsgroups, simply because there is no face to face contact with the speaker and the listener. It is very difficult to transmit emotion when facial expressions are not visible. A system of typing has been the result. Typing in all capital letters is considered shouting and usually means anger. If it is necessary to show emphasis on a particular word, set it off with *. Example: That's *not* what I said. This is more polite than: That's NOT what I said, which would be rude and considered shouting. Another addition is the use of the smiley.

A smiley is a typed electronic equivalent of the familiar yellow smiley faces. Some examples of smileys are:

A happy smiley is: :-)

A sad smiley is: :-(

A wink after a statement meant as a joke is: ;-)

A devilish grin is written: :->

There is also a system of shorthand in which only the first letter of the word is used. Example: FYI means For Your Information. BTW is By The Way. OBO is Or Best Offer. There are many others which will become familiar through use of the Internet.

There is software available to simplify the process of navigating and reading news articles. This software is different for Macintosh and MS-DOS machines. It is important to select the software that is easy for you to use. Ask someone who has the same type of computer what news reader software is used. Try to see some of the newsreader software in operation. It may be necessary to go to a larger computer software store to see newsreader software demonstrated. Since software changes so frequently, any suggestions made here might not be available at the time of publication of this manual. When the newsreader software appropriate to your computer is obtained, you must set it up (configure) it to operate on your computer. Follow the directions in the software manual for your software.

**What are mailing lists and how do I subscribe to them?**

Mailing lists are groups of people interested in certain subjects. Members of the group send messages to a group address and everyone on the mailing list receives the messages as e-mail. You can get messages 24 hours a day. There are thousands of mailing lists. There are several ways to check on what lists are available:

- check the newsgroups.

- some universities have lists of lists:
  **listserv@brownvm.brown.edu.**

• buy a book that has some of the lists available.[3] Be aware, however, that the Internet lists change daily and the lists in the books may be outdated by the time the book is printed.

Subscribe to a mailing list by sending e-mail to a subscription address. The single word Subscribe should be in the body of the message. Follow the directions for subscribing for each list, since lists may have different directions. If help is needed, send e-mail to the group's subscription address with the single word, help, in the body of the message. This will usually bring an e-mail reply that tells how to join the group. It will also tell you how to remove your address from the group, so save the message in case you wish to withdraw from the group.

Tips and Advice for users:

• Lurk (visit without participating) first until you understand the topics and how a particular group operates. Each group usually posts their rules and it is important to read them before jumping into the discussion.

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[3]Eric Braun. "The Internet Directory. Fawcett Columbine [Ballantine Books].

• When subscribing or removing your name from a mailing list, don't post the message to the entire list. Instead, e-mail it to the listserv or automated list manager. When you subscribe on a listserv, keep the welcome message you received so that the address to remove your name is available when needed.

• Download only what you need using file transfers. Download FAQ's (frequently asked questions) rather than reading them online. This permits others to use the system while you read.

• Protect your computer from viruses by downloading programs only from sites maintained by vendors or from well-known archive sites. Install anti-virus software. Beware of unsolicited attachments to messages and check them first before downloading. America Online commercial service provider has noted that some persons may send "mail-bombs" which are automatically generated duplicate messages sent to a person's mailbox by the hundreds until the mailbox is full. It is important to protect your computer from these types of attacks by being aware of what problems are on the online programs.

• Don't post unnecessary messages when responding to discussions. Messages containing only "me too" tacked onto a discussion are annoying. If you wish to participate, say something about the message you are responding to and add a few comments.

• As a "newbie" (newcomer to the group) you will be making mistakes. Accept the criticism you may receive in a gracious manner and resist the impulse to send a "nasty gram" in return. Verbal abuse (flaming) can get out of control quickly and people will shut down rather than participate. The person with whom you wish to exchange information may give up and not respond if you demonstrate your lack of control by flaming a participant who corrected you.

• Do not give out your password to ANYONE. The password gives people the opportunity to use the system under your name. What they do online can then be attributed to you. In addition, you are paying for the time they spend online since your credit card numbers may be linked to the password in the files of the service provider.

## Unit 6
## Internet Resources

**How can you transfer information on the Internet to your computer?**

When browsing through the network, often there are text files available of interest. These text files may contain detailed information on a subject. Downloading the files to your computer is fairly simple The File Transfer Protocol (FTP) is used to download files. Usually the news reader software application will support FTP. Follow the directions in the users manual to download files.

There are three types of software available to download on the Internet: shareware, freeware and public domain.

Shareware software is software that the author will make available to anyone who wants to try it. If you continue to use this software, the author will expect you to register and pay a nominal sum, usually under $50 for the right to continue to use it. The software registration information will show where to send the money. If you do not want to keep the software just delete the software from your computer disk. It is important to keep your commitment to pay the author if you will continue to use the shareware software. The author may need this money to pay for the time used to develop the software. When people continue to use shareware without paying for it, this can be considered theft of services since the author expects a minimum payment for use of the software.

Freeware is software that is available for free. It can downloaded by using anonymous FTP. Freeware generally has some restrictions by the author about sharing or modifying the software. Usually, you can give it to someone, but can not sell it. The author owns the copyright to the software. Anonymous FTP is a service available on the Internet that allows someone to enter files that have been designated publicly accessible. The FTP server must accept the anonymous login (sign on).

Login using the following e-mail format as the password:

username@domain.top-domain

See Unit 4 in this manual for more information about the format of the login.

Public Domain software has no copyright. The author has created it for the good of the community and it can be modified and given to anyone. Public domain software does not require any type of payment. Software created as public domain software will state that it is available for use without charge. There may be instructions on how to obtain the software by contacting an agency or the author.

Do not attempt to obtain commercially-produced, copyrighted software for free on the various networks. Commercial service providers are cracking down on the software piracy (stealing of software) that is going on and you might be unwittingly caught in the crackdown. It is illegal to copy copyrighted software except by the person possessing the original disks who may make one copy for archival purposes. There are monetary fines and other penalties. America Online has developed the ability

to resurrect a screen name and has call-tracing technology to track down offenders. Other commercial service providers are currently developing or sharing in this technology.

## Could I cause problems on my computer by downloading files?

When downloading files into your computer from the Internet, be aware that you may also run a risk of downloading a virus that may infect your computer files. A computer virus is a computer program that has been designed to do certain things without your permission. Computer viruses may delete or erase or change some files from your hard disk, change data in some files, and even scatter information throughout your files. If you plan to download information, it is important to obtain a good virus protection program which can scan the information and remove the viruses before they have a chance to cause problems. There are many types of virus protection programs available. Some virus protection programs will even automatically contact the software development company via your modem and update the virus protection program to include new virus protection. A virus protection program is critical for your computer's health. A current virus is the "Good Times" virus found on online on the Internet. This virus erases the hard disk drive of your computer. As this manual goes to press, there is currently no virus protection that will eliminate it. Therefore, avoid opening any areas using "Good Times" as a file name until a virus protection is developed.

## Is there an easy way to navigate through the Internet?

The Internet is very large and can be difficult to move through all the various files searching for some specific subject. Opening and closing files and then moving to other areas and opening and closing files can be very tiring and time consuming. However, there are several programs currently available that are used to move through the various parts of the Internet.

1. **Gopher**, an Internet navigator, was developed at the University of Minnesota. The mascot of the University of Minnesota is the Gopher, hence the name. Gopher is a menu-driven search program. It is a system of linked menus. The user is given a menu from which to choose an item; another menu comes up as a result of the selection in the first menu. A selection on the second menu will lead to a third menu and the user can continue to make selections. Finally the information desired is retrieved. Gopher is a very easy-to-use search program to locate information.

2. Another program used to navigate the Internet is the **World Wide Web**. World Wide Web, also known as Web or WWW, is based on a hypermedia program that can handle text, graphics and sounds. It was originally developed around 1969 by Ted Nelson, a computer expert, who foretold the connection of each office desk to little screens and the introduction of little leather covered pocket computers. Project Xanadu, a hypertext system was developed by Ted Nelson to organize data as an aid in retrieval. Information is organized in relationship to other information. For example, you are studying the American

Revolution and you want to understand the significance of this revolution to people of the 1770's. So, a search is conducted on a database to locate events occurring in other parts of the world during this period and the roles of influential people during 1770's. The search can be expanded in other databases which include information about religion, education, wealth, and societal customs of the 1770's. A mental picture of the 1770's can then be created by pulling all of these pieces together. The World Wide Web operates in much the same way. It pulls pieces of information together from all over the world using many databases and many computer links. The Web operated according to the client server model. The server is the computer host and the associated software. When this is publicly accessible, it serves as a broadcast station providing access to information and resources contained in the computer's online files. Users on Web servers use client software called Web browsers.

Browse programs are available on the Web servers. A Web server is a special computer linked into the World Wide Web. However, the browse programs on Web servers are rare. It is necessary to connect onto a WWW public server.

Three public WWW servers are:

**hnsource.cc.ukans.edu** (University of Kansas)
**www.njit. edu.** (New Jersey Information Technology)
**info.cern.ch** (Switzerland)

Each of these servers has a different hypertext browsing program. Connect onto the server using telnet, a remote login program. To run telnet, type the telnet command followed by the name of the host you want to use.

To connect to the New Jersey Information Technology World you would type:

**% telnet www.njit.edu.**

Remember, or write down, the escape character which is given in the opening screen in case it may be necessary to unhook your computer from the host computer.

Information about the internet is available using these uniform resource locators (URL)

Yahoo--a rapidly growing collection of Web and Internet based information categorized in a subject tree format.

**http://akebono.stanford.edu/yahoo/**

Internet Web Text -- a hypertext listing of Internet-based guides, indexes, subject and keyword searching resources for assistance in learning about the Internet and the Web.

**http://www.rpi.edu/Internet/Guides/decemj/text.html**

3. **Mosaic** is a third Internet navigator program and is a hyper-text-based information browser that operates similar to HyperCard. It was developed as a part of a continuing series of projects at the National Center for Supercomputing Applications (NCSA) which is located at the University of Illinois at

Champaign-Urbana. There is a freeware version of Mosaic available on the Internet. Use the anonymous FTP to:

**ftp.ncsa.uiuc.edu**

The software and helper applications may be obtained at this address. Some of the helper applications are freeware and some are shareware. Joel Snyder in his MacWorld article: *Taming The Internet* [4] estimated that the fees for shareware and postcards for registration will be $50 and 6MB of disk space on the Macintosh. To use Mosaic you need TCP/IP access. This can be provided by SLIP (see Unit 2 for an explanation of SLIP.) A connection at work or school with a direct Internet connection can also be used.

The helper applications assist with connections and use of other networks. Mosaic is one of the more popular Internet browsers. When connecting to Mosaic, it is necessary to tell Mosaic which Home Page to find. The Home Page, like a HyperCard Home Page, can contain text, graphics, and links to other pages. The main advantage of Mosaic is the ability to use a single program rather than change back and forth between different programs in order to access different parts of the Internet. Mosaic is able to communicate with Gopher and TCP/IP.

A simple explanation of how Mosaic works: you are typing a document in a word processing program and want to add some clip art to illustrate a point. You must close down the word processing program, open a drawing program, develop the clip art to be used, save the clip art, copy it and close the drawing

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[4] Joel Snyder, "Taming the Internet" MacWorld December 1994 pg. 117.

program. Then, reopen the word processing program and paste the clip art in the original document. If you have an interface program, you could directly switch from the word processing program to a section that contains a drawing program which would permit access to clip art programs on your hard disk. Selection and pasting of clip art would be much simpler if you did not need to open and close several programs. Mosaic is the interface program that permits easier movement among different programs.

However, Joel Snyder, in his article *Taming the Internet*, says:

> *"Mosaic is a great first attempt--with a great number of flaws. Mosaic doesn't work with many FTP servers; it has a poor interface to Usenet news; it doesn't allow users to see what t hey're about to click into."*

What does this mean to the user? NCSA has licensed Mosaic to Spyglass which will be making some changes to the program. Spyglass, however, will not sell the new Mosaic directly to consumer. The Spyglass version of Mosaic has been sold to Digital Equipment Corporation. Macintosh network software vendors are expected to include Mosaic in their commercial products by the beginning of 1995. The point to be made here is to be aware when using Internet resources, to watch for problems that may occur. If you are having problems connecting to the Internet or while using the Internet, check with someone else who has a similar system configuration to see if he/she is having the same problems. Sometimes it is the software and not you or your computer.

## Unit 7

## Commercial OnLine Service Providers

| Name | Net Services | Price | Telephone |
|---|---|---|---|
| America Online | E-Mail<br>Usenet newsgroups<br>Mac Software<br>Gopher Search<br>No extra Internet charge | monthly fee<br>+ extra time per hour | 800-827-6364 |
| CompuServe | E-mail<br>Internet forum<br>Telenet to service<br>Mac Software | membership fee<br>+monthly fee<br>+ hour fee extra services<br>downloading + e mail extra | 800-848-8199 |
| Delphi | Internet E-mail<br>Usenet newsgroups<br>Internet forum<br>Gopher search<br>Telnet to other hosts<br>FTP<br>Not Macintosh | monthly fee<br>+ extra time per hour<br>Internet extra fee | 800-695-4005 |
| EWorld | E mail<br>Mac Software<br>No extra Internet charge | monthly fee<br>+ daytime fee<br>+ cheaper night fee | 800-775-4556 |
| GEnie | E mail<br>Internet forum<br>Not Macintosh<br>No extra Internet charge | monthly fee<br>+ extra time per hour<br>cheaper night fee | 800-638-9636 |
| Prodigy | E mail<br>Mac Software<br>No extra Internet charge | monthly fee only | 800-776-3449 |

This is a partial list of the major On-Line service providers. While there are others, these companies provided the most complete information about their system. The commercial on-line services offer limited access to the Internet. Usually there is an e-mail gateway and some newsgroup access. Delphi advertises full access to the Internet. America Online says they have true Internet access in their advertisements. Many of these commercial service providers offer a certain amount of free time to connect and look over the services available. If you have questions about the types of services the service provider has available, the current prices or installation information, contact the provider directly. Since the Internet access information changes quickly, new services will probably be available even as this manual is being printed.

## What is available on the Commercial OnLine Services?

There is a wide variety of information and services available depending upon the commercial service provider you select. Some examples are:

• E-Mail - Electronic mail service is available on most of the service providers. Using E-mail, you can send messages to the President of the United States. Use the addresses:

PRESIDENT@WHITEHOUSE.GOV
VICE-PRESIDENT@WHITEHOUSE.GOV

to tell the President or Vice-President your opinion about some impending legislation. Since the volume of mail is so immense, you will get a polite "thank you" as an automatic response. Some members of Congress also have e-mail capability.

You can exchange e-mail messages with people in other states or other nations. Check the on-line service you use for information about electronic pen pals or keypals.

Discussions about various subjects are held in two places: mailing lists and Usenet newsgroups. There about 6,000 mailing lists and approximately 9,000 Usenet newsgroups. Specific subjects are discussed by large and small groups of people on mailing lists. To join a particular mailing list, send an Internet e-mail message to the list server for that list. Use the word **help** to get instructions on how to subscribe to the list. There are many books that list the various mailing lists available. However, there is no ONE book that lists all of the mailing lists available. The commercial online service may have some information about special interest groups using their service. This list will be available to you when you subscribe to the service. However, to find other lists on the Internet, you must have access to the Internet and use the list server on the internet to find information there.

Some of the types of information available include:

- National News and Weather reports- may include updated information from various parts of the world.

- Travel reservations- search and make plane, train, and hotel reservations.

- Reference libraries- may include enclopedias, dictionaries, college information, and telephone books.

• Shopping- classified ads, merchandise and ordering information from many different types of stores. Look at product reviews and order online using your credit card to pay for merchandise.

• Business and Financial information- stock market quotations, loan comparisons, investment information, plus others.

• Games and entertainment software and online games. There are some ongoing games constantly available. Be aware that there also may be some "adult-type entertainment" which may be offensive. Check over the games and entertainment section before letting minors use it. Schools may want to subscribe to a network service such as LINQ[5] which is an information server tailored to the needs of schools. Access levels can be assigned and access provided to pre-approved sites which can control user access to pornography.

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[5]LINQ Custom Internet Access for Education. "Enhance." pg. 87-88 Spring 95. A service of Quality Computers licensed from ResNova, Inc. Huntingdon Beach, CA.
1-800-777-3642.

## Unit 8

### Starting up your first contact.

If you have subscribed to a commercial online service, follow the instructions given by the service provider. There is usually a section for newcomers to the service and there is a network system operator (sysop) available to assist newcomers. Read over the information received to learn how that particular system operates. Keep a pad and pencil accessible. Have all the required items the commercial online service requires for logon by the computer as you logon. If a friend or colleague uses the same commercial service provider, ask to see the system in operation before you try it. This can help answer a few questions you might have during a first contact.

If you have not subscribed to a commercial online service, you can still connect to other computers using a modem. Bulletin boards, especially local bulletin boards, often are the best option. A bulletin board is an online information service that is connected to a computer server and is available to the public for a nominal charge or sometimes free. A bulletin board (BBS) can be accommodating with easy-to-read menus, simple command structures and very easy help messages. Commands are often limited to one or two letters. Often, the BBS has a specialty-- raising and showing dogs or cats; desktop publishing; history; travel; computers or other subjects. Logging onto the bulletin board is completed nearly the same way as would be done on a commercial online service by using a modem and dialing into the board. There will be a menu to assist with the registration procedures and to explain what

types of restrictions are placed on first-time callers and where to find more specific information about the service.

Usually the Sysop (system operator) may call back on the phone, send information in the mail, or use a modem call-back when the registration of a new member of the bulletin board is completed. There may be some type of payment structure, either cash or file ratios restrictions, that place requirements on uploading of files or posting messages in a volume that depends upon how much the system is used.

Use of bulletin boards for first contacts is usually a good first choice. Often the bulletin boards are local telephone calls which can save money when learning how to operate in the online mode. Locate the telephone numbers and Sysop names in magazine: "OnLine Access" or through your local computer store or contact.

## Bulletin Boards

**FidoNet**. A stream through which thousands of local Bulletin boards exchange messages and files of interest to users. Fidonet is very heavily used in Europe and North American and can exchange private e-mail, request shareware or other files from another system. The network can carry local public conferences on specific topics: cooking, politics, education, etc. A user could post a comment and receive comments from around the world. There are over 25,000 local Fidonet affiliated bulletin boards. Check with the local computer users group or at a local computer store for more information about the local Fidonet contact or other bulletin boards in the area.

After logging onto FidoNet use NODELIST (a complete list of national and international network bulletin boards) to locate a special interest bulletin board. Messages are sent using EchoMail and will move at night when telephone rates are lowest through the regional hubs to zone or continent hubs to the intended party. Check with your local access to FidoNet to see what services are available.

Fido Net
Tim Pozar
Late Night Software
674 Vermont St.
San Francisco, CA 94107
415-695-7727 (voice)
415-956-4177 (fax)

## International Bulletin Boards

International numbers consist of a country code, sometimes a city code, and a local number. You must dial 011 (access code) before every number.

For example: to call Paris, France:

011 (access code) + 33 (country code) + 1 (city code) + local number

England

**Converse**

Northamptonshire 44-933-460744, modem: 2,400 Baud

Internet: dylan@xenakis.demon.co.uk Fidonet: 2:2504/209

Time Zone: EST +5 (Eastern Standard Time plus 5 hours)

Language Supported: English

Areas of Interest: adult (non-sexual) books and literature, general interest, international, self-help/support groups.

**Hints for Users**

You will need to set aside time to become familiar with the Internet. Allow for mistakes to occur as you search the Internet. Don't become concerned if it seems overwhelming at first. Limit yourself to certain areas at first. Later, you will find certain areas that you will enjoy and return to frequently. Be patient with yourself as you learn how to maneuver online. Keep a diary of what areas you tried and what success or problems occurred. This is useful, especially if you have only have a brief time to use the network. Often, you locate some interesting information, but then forget how you arrived at the site and later are unable to find it again.

Keeping a notebook or paper by the computer and writing down the network addresses can be useful to relocate areas. Try to find a buddy to sit with you on your first attempt. This can help reduce the stress of the first contact. In addition, your buddy may know of other areas to try. The buddy can write down the addresses or assist in the contacts. If you do happen to become lost in the maze of the networks, often a buddy can be helpful to reorient yourself.

Be aware that the Internet and bulletin boards may contain material some people consider offensive. Because of the wide ranging nature of the Internet and bulletin boards, it is not possible to "police" the information contained on them. Therefore, monitor the student access to the Internet and bulletin boards rather than giving open access to any area. Develop a list of acceptable locations or sites for student access. Caution students about the provocative nature of some information contained at some of the Internet and bulletin board sites. Avoidance of these sites is the best policy.

## Unit 9
## Resources For Adult Education Classes.

Communication through electronic networks can ease the sense of isolation experienced by rural literacy programs. Electronic networks have been developed in Ontario, Tennessee, and Massachusetts. These networks are facilitating communication among adult literacy programs in their areas. Each of the networks are operated slightly different from each other.

Ontario Literacy Communications Network (CoSy) has linked rural literacy providers across the Canadian province of Ontario. CoSy offers both electronic mail and electronic conferencing capability available to users who call onto a host computer located in Toronto, Canada. This was a pilot project begun 6 years ago to connect six sites and has grown into a network containing over 300 sites, many of which are located in isolated communities.

America On-line is used by the Tennessee Literacy Resource Center network. America On-Line is a commercial service provider that serves as an Internet gateway. It also offers a variety of resources used by administrators, instructors, and learners. Users can discuss information from Smithsonian, National Geographic, Time and CNN. Students can participant in online chats with other literacy students from across Tennessee. Local access numbers are limited, however, which requires the use of long distance phone calls for some sites.

In rural Massachusetts, four adult literacy classrooms of a Literacy Project have been electronically connected to each other. Internet access is available through a regional vocational-technical school in one county and the University of Massachusetts system in another. Literacy classrooms in Orange, Haydenville, and Greenfield can use the Internet by making a local telephone call. One site, Ware, can also connect to the Internet but must dial a toll number. A grant from the Massachusetts System for Adult Basic Education Support provided a grant for the electronic mail project. The project was designed to encourage student leadership by teaching some students how to use the electronic system and then having these students teach other students as part of a self-esteem and confidence enhancement. Students have been sharing information about health, special events, and potluck dinners.

More information for each site:

Anita Watkins
c/o George Brown College
Box 1015 Station B
Toronto, Ontario M5T 2T9 (416)-929-4639
e-mail: awatkins@gbrownc.on.ca

Brenda Bell, Program Manager. Tennessee Literacy Resource Center.
Center for Literacy Studies. The University of Tennessee. 2046 Terrace Ave. Knoxville TN 37996-4351 (615)-974-4109
e-mail: literacy@utkvx.utcc.utk.edu

David Henry, Site Coordinator. Pioneer Valley Adult Education Center P.O. Box 415 Haydenville, MA 01039 (413)-268-7746
e-mail: pvae1@K12.ucs.umass.edu
[Information from Rural Adult Education Forum]

Adult educators are using the Internet and bulletin board access to expand the horizons and knowledge of students.

**Suggestions for use: Students**

1. Set up e-mail for student to use at different sites as a way to exchange letters and other student created documents. Since these are e-mail messages, students do not need to be online with the other site at the same time.

2. Set up online search sites for information on research paper topics. These could be developed into a notebook and used as a reference in classes.

3. Develop a keypal list of students or persons in other countries who will correspond with students via e-mail.

4. Have students sign onto newsgroups using listserve command to locate a group of interest. They can participate or "lurk" (observe without participating) and then write about their experiences.

5. Check for local bulletin boards that might be suitable for student use. Be sure to monitor the student's use of the bulletin boards to prevent use of inappropriate topics.

Suggestions for use: Educators

1. ABLE INFORM

Assistive technology, disability, and rehabilitation information maintained by NARIC and ABLEDATA serving the Nation's disability community. Available 24 hours a day for on-line access to databases. Provides conferencing, bulletins, and classified listings of previously owned adaptive devices. Contact Dan Wendling at 800/227-0216 or 301/588-9284. Cost of access is the price of a telephone call to offices in Silver Spring, Maryland. No subscription charges.

NARIC & ABLEDATA
8455 Colesville Road, Suite 935
Silver Spring, MD 20910.

2. Outreach & Technical Assistance Network (OTAN)

There is a charge for the software used to access the system and also for online usage.
OTAN Forum is available through Gopher:

**gopher.scoe.otan.dni.us port 70**

Includes various categories of information:

Course Outlines
Curricula Resources
Round Table Discussion
Lesson Plans
Want ads
Educational Grants
Demonstration Software
Public Domain Software

This is an Adult Education 2000 Project and provides a system for the storage, retrieval, and dissemination of current and historical adult education resources by maintaining a national network of information sources. The system also provides an electronic forum of the latest innovations in adult education practice and research. This is a California focused network but other states are welcome to use it.

John Fleischman, Director.
Internet: **jfleischman@scoe.otan.dni.us**
Mail address:
Sacramento County Office of Education
9738 Lincoln Village Drive
Sacramento, California 95827-3399
(916) 228-2580 (916) 228-2563 FAX

3. National Center on Adult Literacy (NCAL) University of Pennsylvania

Distributes research publications, newsletters, calendar of events, and information about related programs. Also available: searchable database of information about adult literacy software and companies; other adult literacy resources including archives of free or low-cost software, electronic journals related to adult literacy, databases from the Educational Resource and Information Center (ERIC) system, and the OTAN adult literacy archives. NCAL's Gopher also has an archive of current federal adult literacy legislation policy and an archive of shareware software for literacy instruction.

Technical and Professional Resources such as Library of Congress, the British Museum, ERIC (Educational Resources Information Center) Clearinghouse, and government agencies are also available.

4. Access to NCAL's Gopher

Via: America Online,
Delphi Internet Services
and through a direct connection to Internet.

Internet: **litserver.literacy.upenn.edu.**

5. Access to NCAL Documents:

Via: America Online:
•Log onto America Online and select the Internet Center.
•When in the Internet Center, select:
FTP Preview, then
Enter FTP Area, then
Go To FTP
In the FTP window, select: Other Sites.

Site address: **litserver.literacy.upenn.edu.**

6. Sign onto NCAL's mailing list: e-mail requests to:

**ncal@literacy.upenn.edu**

NCAL has developed a partnership with OTAN to create an e-mail based mailing list focused on technology issues (LISTSERV). Every two weeks participants on the list will receive an e-mail newsletter from the NCAL/OTAN staff containing breaking news and emerging issues in adult literacy technology.

7. Access to NCAL/OTAN e-mail:

**listserv@hlpusd.k12.ca.us**

type: subscribe OTAN-L (insert your name here)

Participants will be able to hold interactive discussions on issues raised in the newsletter by sending e-mail messages to: **otan-1@litserv.hlpusd.k12.ca.us.**

8. USENET Discussion Group on Adult Education and Adult Literacy

The discussion group is called "MISC.EDUCATION.ADULT." USENET is a bulletin board divided into 7 major discussion areas, each of which is represented in the net by a three or four letter abbreviation: Recreation (rec), Computers and Networking (comp), USENET system (news), Science (sci), Social (soc), Discussion (talk), Miscellaneous (misc), and Alternative

Views (alt). Each of these discussion areas are further divided into subgroup discussions. The group on adult education and adult literacy is a subgroup of the Miscellaneous group. To access: log on to the Miscellaneous group first, then go to the subgroup adult education and adult literacy.

9. America Online: Adult Literacy Newsgroup

This is a chat group consisting of a group of people who are discussing topics of interest to educators and administrators. The group uses "real-time" typed messages. This means that the other people online can read your message as it is being typed and can respond to it instantly. The name of the person responding is given with the message.

These chats are sometimes hosted by or feature key people in the field of adult literacy. The group is scheduled to meet every Monday night usually at 9:00 or 9:30 p.m. on the commercial service provider America Online. You must be a member of America Online to participate.

There are many books and magazines about the Information Superhighway currently available. Only a few are mentioned since the list is changing very rapidly. Books usually take months to develop the materials and then additional time to be published. Since the Internet changes quickly, books will be slightly outdated almost from the moment of publishing. However, books are useful for learning basic information about the Internet.

## Books

"Washington Online: How to Access the Government's Electronic Bulletin Boards"
Author: Bruce Maxwell. Published by Congressional Quarterly. (ISBN 1-56802-000-7) $19.95.
Tap into vast free resources available on over 200 federal bulletin boards systems. Includes: how to reach the boards, what they offer and how to navigate the bulletin board system. Find federal job opening information, educational material for children, consumer and health data, computer software and government statistics. Arranged by subject: agriculture, business, computers, criminal justice, education, emergency response, energy, environment, ethnic groups, government, health and medicine, jobs, science and technology and transportation.

"Internet How-to"
Author: Harry Henderson. Published by Waite Group. (ISBN 1-878-739-68-9)
Explains e-mail, file transfer protocol, Internet Relay Chat, telnet, gopher and World Wide Web. Gives a broad view for use of the Internet and how to use the appropriate internet tools for various tasks.

"Cruising America Online"
Authors: David C. Garnder and Grace Joely Beatty. Published by Prima Publishing. (ISBN 1-55958-597-8)
A visual guide to the popular America Online commercial service provider. Offers information on how to navigate the service and use e-mail system, play computer games, read latest news stories, meet other people on-line and receive technical help.

## Magazines

These are the most up-to-date sources of information. However, there is still a publishing delay of approximately 6 months to a year. If you are seeking the latest, check newspapers or information from the commercial service vendors if you are unable to access the online services. Usually the online services are the most current of the information available. Be aware, however, that some information may be only rumor. Therefore do not take as truth everything in print.

"Net Guide"

Guide to Internet and Online Services. Monthly.
More than a hundred new online listings. Time and money-saving workshops on how to navigate the Net. Reader polls and special forums. Profiles of people who travel in the fast lane of the superhighway.
Departments: Net mail; Net Prowler; Newsroom; CyberGuide to various sites. 800/829-0421 subscription information. P.O. Box 420355 Palm Coast Florida 32142-9371.

"Internet World"

A users' guide to the Internet. Monthly.
Contains New Product and Service Announcements; review copies of books and software, Fax copies of popular articles from back issues of "Internet World"; feature articles about new sites, Internet news, Entry level column for beginners, Internet Mall Directory for classified ads.
815/734-1261 subscription information.
P.O. Box 713 Mt. Morris, IL 61054.

## Unit 10

## Glossary

ARPAnet - a Defense department network developed in early 1970's that formed the basis for the Internet.

BBS - Bulletin Board System. Place to leave messages and locate information about a variety of subjects.

Bitnet - a network of mainly IBM mainframe computers. System names may contain letters VM and are eight characters long or less.

Bulletin Boards - a system, USENET, which is a network of over 2,000 different topics available for persons to login for exchange of messages. Can include hobbies, political interest groups, computers, and jokes as some of the topics.

Chat - a program that permits user to talk to dozens of people at one time. A widely used chat program is the Internet Relay Chat (IRC). Chat programs are also available on commercial service provider systems.

Domain Name - an internet name containing the zone, name of person or company, and site type. Sites are: commercial (com), educational institutions (edu), government bodies and departments (gov), international organizations (int), military sites (mil), networking organizations (net), and other groups that don't fit into the previous categories (org).

Down loading - transferring information from a source on a network to your computer files.

E-mail - electronic mail. An electronic message system used to transfer messages to other locations via a modem and computer.

FAQ - frequently asked questions. A list of questions frequently asked about mailing lists, network newsgroups, Multi-user game players and other internet sites.

FTP - file transfer protocol. A system that exchanges files with a host computer.

Gopher - a menu-based system and set of protocols used for exploring information resources.

Hypertext - a way of organizing the retrieval of data from different areas. It keeps track of where each piece of information is located and can travel down one path, and back track to check a different path. Information can be arranged in multiple ways, from different sources so that related information is easily located. Example: searching for a medical condition which leads to how a particular body system operates, which leads to methods of treatment, which leads to prominent researchers in the field.

Internet - a worldwide interconnected group of networks.

IRC - Internet Relay Chat (IRC.) A chat program that links computers of many persons so that they can have an online interactive discussion.

LISTSERV - a mailing list program containing thousands of lists of members organized by interest or topic area. Program will automatically forward mail from and to members of the group. Manages the mail between members and can be used to locate mailing lists of interest.

Mosaic - a free browser software program developed at the National Center for Supercomputing applications. Can be obtained by calling up NCSA and transfer the software. Requires a powerful computer and fast (9600 + baud) modem. Used to navigate the World Wide Web.

Modem - modulator/demodulator; a peripheral device that links a computer to other computers via telephone lines.

Network - interconnected computers individually controlled. Includes hardware and software used by the computers. Allows sharing of data, printers, and exchange of electronic mail.

PPP - point to point protocol. Enables a computer to communicate with other computers using a set of rules that govern interaction. Uses TCP/IP as interaction commands.

Service provider - organization or company that provides connections to the Internet.

SLIP - Serial Line Internet Protocol. System of rules that enables a computer to communicate with other computers using TCP/IP over standard telephone lines.

TCP/IP - Transmission Control Protocol/Internet Protocol. a system of networking protocols developed at the University of California for the U.S. Department of Defense.

Terminal emulation - software that permits a personal computer to communicate with a host computer by imitating the same form used by the host computer.

URL - uniform resource locator used by Web browsers to locate information.

USENET - a network of users communicating by using the UNIX copy protocol.

UNIX - a popular kind of operating software that was developed at the University of California at Berkeley. Includes all of the software needed to hook up to a network. Popular with universities and businesses.

WWW - World Wide Web - a hypertext based Internet service used for browsing the Internet resources.

## Appendix

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**Planning for Information Superhighway Connection and Use**

| **Equipment** | **Price** |
|---|---|
| Monitor - Color/Black & White | |
| CPU at least 4 MB RAM | |
| Hard Disk Drive - size in megabytes | |
| Keyboard | |
| Modem 14,000 baud or up | |

**Total Computer Equipment Charges**

Telephone Connection Line Installation

Commercial Network Provider Charges

Extra Charges for special services by Service Provider

Services:

_____

_____

_____

_____

Amount of time allocated for instructor use

cost per hour

Amount of time allocated for student use

cost per hour

**Total Estimated Budget for Information Superhighway Access**

**Planning for Information Superhighway Connection and Use**

| **Equipment** | **Price** |
|---|---|
| Monitor - Color/Black & White | |
| CPU at least 4 MB RAM | |
| Hard Disk Drive - size in megabytes | |
| Keyboard | |
| Modem 14,000 baud or up | |
| **Total Computer Equipment Charges** | |
| Telephone Connection Line Installation | |
| Commercial Network Provider Charges | |
| Extra Charges for special services by Service Provider | |
| Services: | |
| _____ | |
| _____ | |
| _____ | |
| _____ | |

Amount of time allocated for instructor use _____
cost per hour _____

Amount of time allocated for student use _____
cost per hour _____

**Total Estimated Budget for Information Superhighway Access** _____

Evaluation Form:

Return to:
Dr. Barbara Woodruff
Adult Education Job Training Center
1 Belle Ave. Lewistown PA 17044

Please assist us in adapting this manual to your needs. Fill out this form and return to the above address after you have connected to the internet and used various sites for several weeks. Please remember this is a beginning manual and because of the changing nature of the internet, some internet material may not have been available to be included.

How useful was the layout of the manual?

Extra white space was provided on manual pages, how did this help in the reading?

How understandable were the technical descriptions?

What was the first site you used on the internet and why?

What could be changed to improve the usefulness of the manual.

What special sites would you recommend to other adult educators? Please give as complete an internet address as possible.